

IN THE CLAIMS:

1. (Withdrawn) A fire fighting apparatus comprising:

(a) a bucket capable of being suspended from an aircraft, the bucket having an open upper end to enable the bucket to be filled with a fire retardant such as water, and

(b) a valve located in the region of the base of the bucket for permitting a controlled 5 volume of the bucket load to be discharged remotely by the aircraft pilot, the valve being attachable to the aircraft by at least one remotely actuatable valve line, stay or cable that is not otherwise attached to the bucket, and at least one separate remotely actuatable bucket line, stay or cable that is not otherwise attached to the valve is provided for attaching the bucket to the aircraft, wherein the bucket and the valve are selectively movable relative to 10 one another on independent actuation of the respective lines, stays or cables to facilitate opening or closing of the valve.

2. (Withdrawn) A fire fighting apparatus comprising:

(a) a bucket capable of being suspended from an aircraft, the bucket having an open upper end to enable the bucket to be filled;

(b) a valve located in the region of the base of the bucket for permitting the contents 5 of the bucket to be discharged remotely by the aircraft pilot; and

(c) sensing means to dynamically sense a bucket attribute to enable the bucket to be filled or discharged to a pre-determined volume by the pilot.

3. (Withdrawn) A fire fighting apparatus according to claim 2, wherein the bucket attribute is the level of water in the bucket.

4. (Withdrawn) A fire fighting apparatus according to claim 2, wherein the bucket attribute is the weight of the bucket.

5. (Withdrawn) A fire fighting apparatus according to claim 2, wherein the sensing means includes a pressure sensitive transducer that measures the pressure of hydraulic fluid associated with the apparatus, said pressure being directly proportional to the weight of the bucket.

6. (Withdrawn) A fire fighting apparatus according to claim 5, wherein the sensing further includes a variable voltage regulator adapted to receive a measurement of pressure from the transducer and control the opening and closing of the valve, the variable voltage regulator closing the valve when the pressure falls below a predetermined level, thereby trapping the proportional weight of water in the bucket.

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7. (Withdrawn) A fire fighting apparatus comprising:  
(a) a bucket capable of being suspended from an aircraft, the bucket having an open upper end to enable the bucket to be filled with a fire retardant such as water;  
(b) a valve located in the region of the base of the bucket for permitting the contents

5 of the bucket to be discharged from the bucket remotely by the aircraft pilot; and

(c) a reservoir for a chemical fire retardant, the reservoir having release means which when activated permits the flow of chemical fire retardant to the region of the underside of the valve where it becomes entrained with water being discharged through the valve.

8. (Withdrawn) A fire fighting apparatus according to claim 7, wherein the reservoir is located externally of the bucket.

9. (Withdrawn) A fire fighting apparatus according to claim 7, wherein the reservoir is capable of delivering the chemical fire retardant to the underside of the valve by a gravity feed.

10. (Withdrawn) A fire fighting apparatus according to claim 7, wherein the release means includes at least one solenoid valve.

11. (Withdrawn) A fire fighting apparatus according to claim 7, and further including a sensor for sensing the level or weight of water in the bucket.

12. (Withdrawn) A fire fighting apparatus according to claim 11, wherein the sensor is a pressure sensitive device which causes the valve to close when the weight of the

bucket falls below a predetermined level.

13. (Withdrawn) A fire fighting apparatus according to claim 12, wherein the pressure sensitive device is a transducer.

14. (Withdrawn) A fire fighting apparatus according to claim 13, wherein the transducer operates indicator means to indicate to the pilot the volume or level of water in the bucket.

15. (Withdrawn) A fire fighting apparatus according to claim 7, and further including means for restricting the flow of chemical fire retardant from the reservoir when the bucket has been emptied to a predetermined level.

16. (Withdrawn) A fire fighting apparatus according to claim 15, wherein the flow of chemical fire retardant from the reservoir is restricted when approximately 75% of the water has been emptied from the bucket.

17. (Withdrawn) A fire fighting apparatus according to claim 7, wherein said valve is attachable to the aircraft by at least one remotely actuatable valve line, stay or cable that is not otherwise attached to the bucket, and at least one separate remotely actuatable bucket line, stay or cable that is not otherwise attached to the valve is provided for attaching the

5        bucket to the aircraft, wherein the bucket and the valve are selectively movable relative to one another on independent actuation of the stays to facilitate opening or closing of the valve.

18. (Withdrawn) A fire fighting apparatus according to claim 1, and further comprising sensing means to dynamically sense a bucket attribute to enable the bucket to be filled or discharged to a pre-determined volume by the pilot.

19. (Withdrawn) A fire fighting apparatus according to claim 18, wherein the bucket attribute is selected from the level of water in the bucket and the weight of the bucket.

20. (Withdrawn) A fire fighting apparatus according to claim 1, and further comprising a reservoir for a chemical fire retardant, the reservoir having release means which when activated permits the flow of chemical fire retardant to the region of the underside of the valve where it becomes entrained with water being discharged through the valve.

5        21. (Withdrawn) A fire fighting apparatus according to claim 1, wherein said valve comprises a valve body in the form of a disc having a pair of leaves capable of flexing about a substantially central hinged portion.

22. (Withdrawn) A fire fighting apparatus according to claim 21, wherein said leaves flex upwardly in a valve opening condition.

23. (Currently Amended) A fire fighting apparatus comprising:

(a) a tapered bucket capable of being suspended from an aircraft, the bucket having a bucket wall, an open upper end to enable the bucket to be filled with a fire retardant ~~such as water~~, and a bucket base comprising a ~~pair of leaves or wings~~ valve having at least one leaflet capable of flexing about a substantially central hinging region; and

(b) an actuator operable from the aircraft, the actuator including a hydraulic cylinder arrangement that utilizes the weight of the fire retardant to apply a force to selectively flex for flexing the at least one leaflet the leaves about the hinging region between a closed position wherein a periphery of the leaves ~~at least one leaflet makes~~ make a sealing contact with the bucket wall and an open position wherein a portion of the ~~at least one leaflet extends~~ leaves extend upwardly from the hinging region permitting a volume of fire retardant to be discharged through a gap between the ~~at least one leaflet leaves~~ and the bucket wall wherein the hydraulic cylinder arrangement includes:

10 the weight of the bucket;

15 a valve opening cylinder operatively connected to the bucket base for flexing the at least one leaflet, the valve opening cylinder in hydraulic communication with the weight bearing cylinder;

20 a recharge cylinder in hydraulic communication with the weight bearing cylinder and valve cylinder for recharging the weight bearing cylinder wherein the cylinder is recharged in response to the weight of fire retardant acting on the at least one leaflet to close the at least one leaflet and discharged in response to un-weighting the tapered bucket;

a first hydraulic valve in hydraulic communication between the valve opening cylinder and the recharge cylinder; and

25 a second hydraulic valve in hydraulic communication between the first hydraulic valve and the recharge cylinder; and,

a check valve in hydraulic communication between the first and second hydraulic valves and the weight bearing cylinder;

and wherein

30 i) when the tapered bucket is weighted, opening the first hydraulic valve and closing the second hydraulic valve opens the at least one leaflet;

ii) when the tapered bucket is weighted, closing the first hydraulic valve and opening the second hydraulic valve closes the at least one leaflet and recharges the recharge cylinders; and

35 iii) when the tapered bucket is un-weighted, hydraulic fluid flows from the recharge cylinder through the check valve to the weight bearing cylinder to recharge the weight bearing cylinder.

24. (Canceled)

25. (Withdrawn) A fire fighting apparatus as in claim 23 wherein the actuator includes sensing means to dynamically sense a bucket attribute to enable the bucket to be filled or discharged to a pre-determined volume by the operator.

26. (Withdrawn) A fire fighting apparatus according to claim 23, wherein the bucket attribute is the level of fire retardant in the bucket.

27. (Withdrawn) A fire fighting apparatus according to claim 23, wherein the bucket attribute is the weight of the bucket.

28. (Withdrawn) A fire fighting apparatus according to claim 25, wherein the sensing means includes a pressure sensitive transducer that measures the pressure of hydraulic fluid associated with the apparatus, said pressure being directly proportional to the weight of the bucket.

29. (Withdrawn) A fire fighting apparatus according to claim 28, wherein the sensing means further includes a variable voltage regulator adapted to receive a measurement of pressure from the transducer and control the opening and closing of the valve, the variable voltage regulator closing the valve when the pressure falls below a predetermined level, thereby trapping the proportional weight of fire retardant in the bucket.

30. (Withdrawn) A fire fighting apparatus as in claim 23 further comprising a reservoir for a chemical fire retardant, the reservoir having release means which when activated permits the flow of chemical fire retardant to the region of the underside of the valve where it becomes entrained with fire retardant being discharged through the valve.

31. (Withdrawn) A fire fighting apparatus according to claim 30, wherein the reservoir is located externally of the bucket.

32. (Withdrawn) A fire fighting apparatus according to claim 30, wherein the reservoir is capable of delivering the chemical fire retardant to the underside of the valve by a gravity feed.

33. (Withdrawn) A fire fighting apparatus according to claim 30, wherein the release means includes at least one solenoid valve.

34. (Withdrawn) A fire fighting apparatus according to claim 30, further including a sensor for sensing the level or weight of fire retardant in the bucket.

35. (Withdrawn) A fire fighting apparatus according to claim 30, wherein the sensor is a pressure sensitive device which causes the valve to close when the weight of the bucket falls below a predetermined level.

36. (Withdrawn) A fire fighting apparatus according to claim 35, wherein the pressure sensitive device is a transducer.

37. (Withdrawn) A fire fighting apparatus according to claim 36, wherein the transducer operates to indicate to the operator the volume or level of fire retardant in the bucket.

38. (Withdrawn) A fire fighting apparatus according to claim 30, further including means for restricting the flow of chemical fire retardant from the reservoir when the bucket has been emptied to a predetermined level.

39. (Withdrawn) A fire fighting apparatus according to claim 30, wherein the flow of chemical fire retardant from the reservoir is restricted when approximately 75% of the fire retardant has been emptied from the bucket.

40. (Withdrawn) A fire fighting apparatus according to claim 23, wherein said valve is attachable to the aircraft by at least one remotely actuatable valve line, stay or cable that is not otherwise attached to the bucket, and at least one separate remotely actuatable bucket line, stay or cable that is not otherwise attached to the valve is provided for attaching the bucket to the aircraft, wherein the bucket and the valve are selectively movable relative to

one another on independent actuation of the stays to facilitate opening or closing of the valve.